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AUTHOR	Willett, Terrence
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ABSTRACT

This document discusses the Puente program at Gavilan Community College. The Puente program has historically focused on Latino students who intended to transfer to four-year institutions and it is currently focusing in underrepresented students with transfer intent, but is open to all. Puente students are able to enroll in English classes designed to meet their needs and the goals of these classes are to help provide a supportive academic where Puente students can succeed. This report compares the rates of success, retention, and persistence of Puente students to other Gavilan students in English 250 and 1A. The report provides definition for success rate, retention rate, and persistence rate. The data was analyzed using Chi-square values. The following are some of the key findings: (1) Compared to non Puente students, Puente students succeeded in significantly higher rates in English 250A and 1A; (2) these students were retained at significantly higher rates in English 250 and persisted from English 250 to 1A at significantly higher rates when including all students; and (3) performance enhancement was more pronounced in English 250, Practical Writing, than in the subsequent course, English 1A, Composition. (MZ)

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GAVILAN COLLEGE

Puente Student English Success, Retention, and Persistence at Gavilan Community College

Terrence Willett
Director of Research
April 2002

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Summary

Participation in Puente in general appeared to enhance performance in English classes and progression through the English curriculum. Performance enhancement was more pronounced in English 250, *Practical Writing*, than in the subsequent course, English 1A, *Composition*.

Introduction

Historically, the Puente program had focused on Latino students who intended to transfer to 4-year institutions. Currently, the program focuses on underrepresented students with transfer intent but is open to all. At Gavilan Community College, Puente students are able to enroll in English classes designed specifically for their needs. These classes are based on the 3-fold Puente model of teaching, counseling, and mentoring and have an in-class counselor, ongoing counseling, a mentor component, tours of 4-year colleges, and a motivational conference. The English classes included are a Fall semester section of English 250, *Practical Writing*, and a Spring semester section of English 1A, *Composition*. English 250 is required for an Associate's degree at Gavilan College. English 1A is transferable to 4-year colleges and is required for a Bachelor's degree.

The goal of these English sections is to help provide a supportive academic setting where Puente students can succeed. **This report compares the rates of success, retention, and persistence of Puente students to other Gavilan students in English 250 and 1A.**

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Methods

Data on students in English 250 and English 1A from Fall 1994 to Fall 2001 were extracted from the campus MIS database using BrioQuery 6.6. Data from Summer 2001 were not available at the time of this report. Puente English was not offered Fall 2000 or Spring 2001. English 250 had 3,816 enrollments with 182 of those being Puente students and English 1A had 5,884 students with 170 of those being Puente students. Definitions used in this report are as follows:

Success rate = proportion of students earning a grade of C or above;

Retention rate = proportion of students who did not withdraw;

incompletes are defined as not successful but retained;

Persistence rate = proportion of students taking English 1A after taking English 250.

Those few cases where a student took English 1A before or simultaneously with English 250 were not counted as persisters. Definitions of success and retention are those adopted by the Research and Planning Group of the California Community Colleges.

Raw rates were compared between Puente and non-Puente students using a Chi-square analysis. Success rates in English 250 and 1A were also predicted using a forward stepwise likelihood ratio logistic regression, a C5.0 machine learning algorithm with 10 fold boosting, and a pruned Classification and Regression Tree (CART) with Gini impurity to ensure that other variables were not confounding the analysis. Predictor variables included Puente participation, GPA, gender, language, high school origin, age, educational status, employment hours, total units attempted, Ethnicity, and educational goal. An analysis of covariance (ANCOVA) provided another test of the effect of Puente on success rates controlling for GPA. SPSS 10.0.7 provided the analysis for the logistic regression and ANCOVA. Clementine 6.6 provided the analysis for the C5.0 and CART algorithms. Chi-square values were calculated manually.

Results

Compared to non Puente students, Puente students succeeded in significantly higher rates in English 250 and 1A, were retained at significantly higher rates in English 250, and persisted from English 250 to 1A at significantly higher rates when including all students but not when restricted to only those who consistently stated transfer as an educational goal (Table 1, Figure 1, Figure 2, Figure 3). Logistic regression suggested that English 250 success rates could be predicted by Puente participation. For English 250, significant predictor variables in order of entry included GPA, Puente participation, gender, language, and high school origin (Cox and Snell $R^2 = 0.375$, Nagelkerke $R^2 = 0.504$, $p < 0.005$, accuracy = 79.9%). Participation in Puente enhanced the probability of success in English 250. The C5.0 had Puente among the fairly complex rules that predicted success (accuracy = 83.51%). A pruned CART used only GPA as a rule predicting that those with a GPA greater than or equal to 1.835 would be successful (accuracy = 79.00%). The ANCOVA suggested that Puente participation had a significant positive effect on success in English 250 when controlling for GPA (Puente effect $F(1, 3642) = 61.453$, $p < 0.0005$; $R^2 = 0.378$).

For the logistic regression predicted success in English 1A, significant predictor variables in order of entry included GPA, educational goal, gender, age, language, Puente participation, and employment hours (Cox and Snell $R^2 = 0.298$, Nagelkerke $R^2 = 0.409$, $p < 0.005$, accuracy = 78.0%). The C5.0 did not have Puente among the fairly complex rules that predicted success (accuracy = 81.08%). A pruned CART also did not use Puente participation as a prediction rule (accuracy = 78.74%). Participation in Puente enhanced the probability of success in English 1A. The ANCOVA confirmed that Puente participation had a significant positive effect on success in English 1A when controlling for GPA (Puente effect $F(1, 5758) = 4.445$, $p = 0.035$; $R^2 = 0.305$).

Discussion

Participation in Puente appears related to enhanced academic performance in English in general and especially for English 250 where effect sizes were larger. Three of four statistical models found Puente participation increased the probability of success in English 250. For English 1A, the two classical statistical models (logistic regression and ANCOVA) showed a significant relation between Puente participation and enhanced success rates while the two "data mining" models (C5.0 and CART) did not.

Most extraordinary was the difference in persistence rate when including all students. Part of this difference may be due to the Gavilan Associate's degree requirement of English 250, which does not provide incentive to take English 1A. The incentive to take English 1A exists for students who wish to transfer to a 4-year college and who do not constitute a large proportion of non-Puente students but does include all Puente students. Comparing transfer oriented non-Puente students to Puente students did not show a significant difference in persistence rates but the rates were almost maximally high for both groups.

The weaker effects of Puente on the second English class (1A) could be explained by non Puente students who take English 1A having a greater commitment, more institutional involvement, effective social support, and/or more academic experience that simulates the involvement, support, and training obtained through Puente. Other explanations are also possible and could be explored and tested with further research.

It must be noted that as students were not randomly assigned to Puente participation conditions, self-selection may play a role in academic performance effects. Statistical methods of controlling for differences in factors such as GPA have been employed but differences due to unmeasured factors such as parental support or parental educational level have not been controlled for. This limitation should be kept in mind when interpreting results or generalizing findings.

Table 1. Success, retention, and persistence rates in English classes for Puente and non-Puente students.

	English 250			English 1A			Persistence Rate from English 250 to 1A	
	Success Rate	Retention Rate	N	Success Rate	Retention Rate	N	All English 250 Students	English 250 students with Transfer Goal
not Puente	53%	76%	3634	62%	81%	5714	17%	95%
Puente	82%	92%	182	70%	85%	170	70%	99%
X^2	59.19	23.49		3.98	1.83		395.18	2.04
df	1	1		1	1		1	1
p	<0.005	<0.005		0.046	0.18		<0.005	0.15
Statistically Significant?	Yes	Yes		Yes	No		Yes	No

Success rate = proportion of students earning a grade of C or above;

Retention rate = proportion of students who did not withdraw;

incompletes are defined as not successful but retained;

Persistence rate = proportion of students taking English 1A after taking English 250.

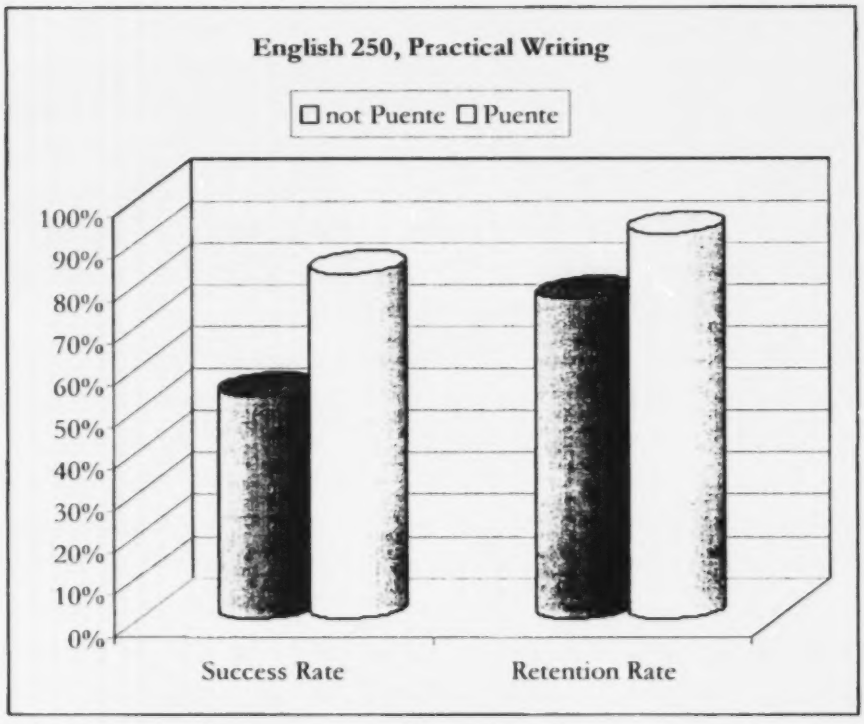

Figure 1. Success and retention in English 250 by Puente participation

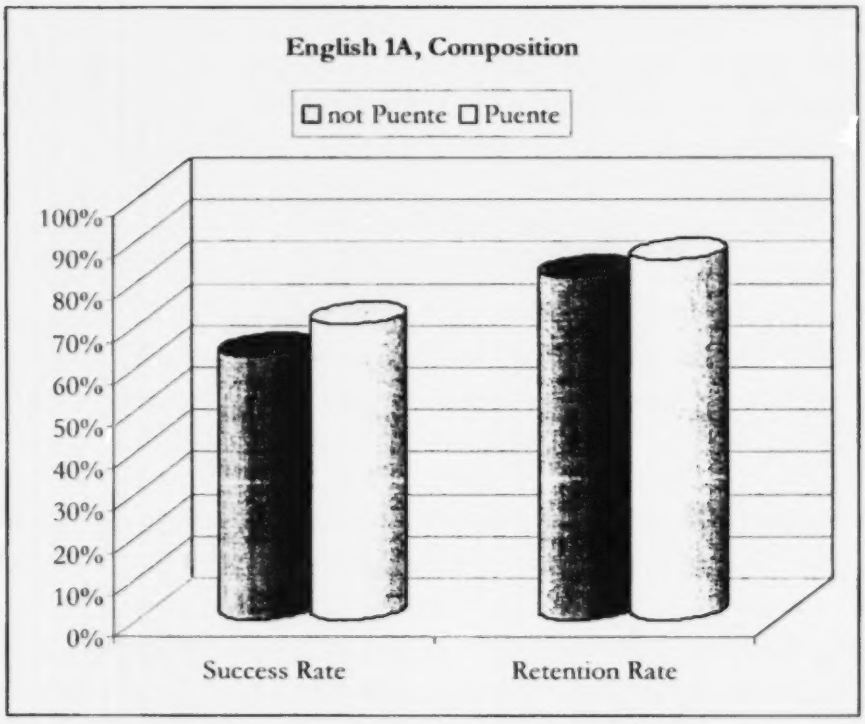

Figure 2. Success and retention in English 1A by Puente participation.

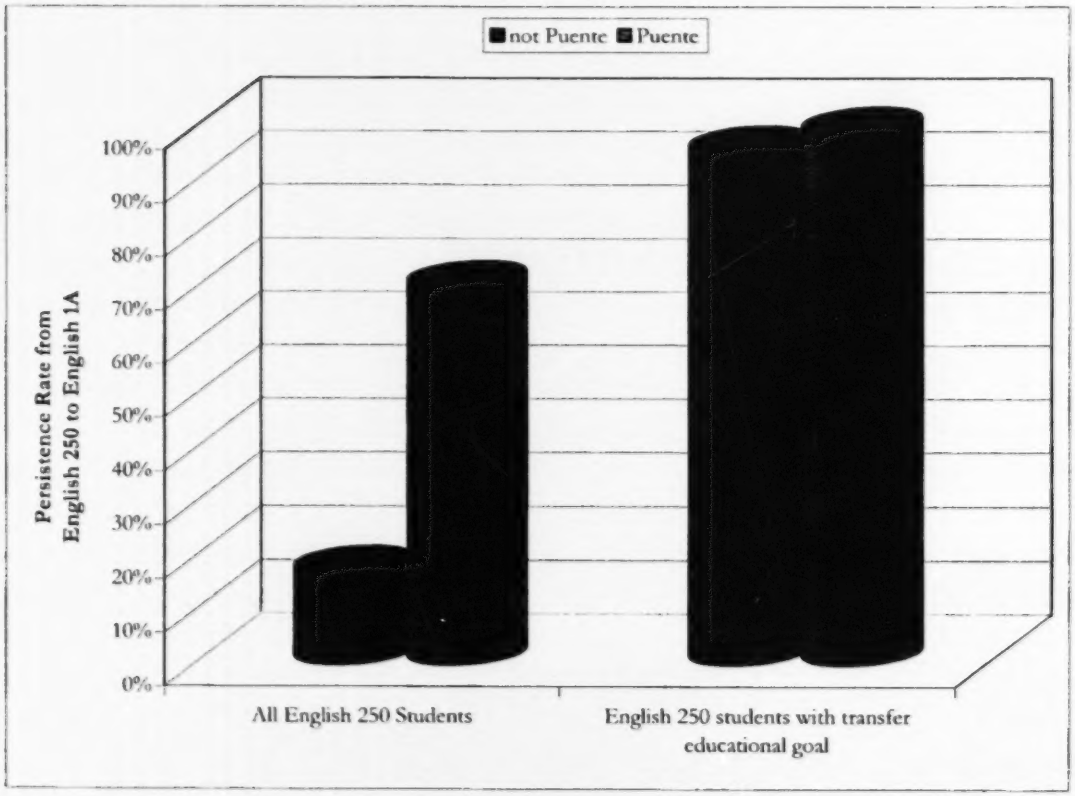

Figure 3. Persistence from English 250 to English 1A by Puente participation and educational goal.

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